

It refers to the employment of various-sized watch-glasses. They are affixed to the vertical sheets of mica, and the specimens are introduced into their concavities; each glass being fastened to the mica by threads passed through two or more holes previously drilled at its circumferential margin. I find two holes sufficient, one on either side; but greater fixity and security may be obtained by boring more apertures at equidistant intervals. This adds, however, to the expense and risk of breakage. The holes should freely admit the passage of an ordinary needle. This plan is eminently suitable for the display of small flukes, *Cysticerci* (of the "measle" kind), and minute *Hydatids*.

5. A few years ago I initiated the employment of carmine, aniline, and other pigments in the preparation of Entozoa for museum purposes, and I am glad to be able to state that the specimens thus first treated still retain their colouring almost unimpaired; at least, this is the case with those saturated with carmine. For microscopic purposes, these pigments had long previously being employed both here and on the Continent. Some of the magenta-dyed preparations have stood very well, where the carbolic-acid solution had been sufficiently strong to fix the colour. The specimens preserved in the Museum of the Middlesex Hospital, however, hardly offer a fair criterion of the durability of this latter pigment, since the preparations have been all along exposed to a strong sun-light. In a large collection the use of carmine should not be excessive, but in particular instances (as, for example, in the encapsuled condition of *Trichina spiralis*) its employment cannot be too highly recommended.

[The above remarks were illustrated by the exhibition of specimens of *Hydatids*, *Cysticerci*, *Amphistomata*, *Sphæriculariæ*, *Trichinæ*, *Spiropteræ*, and *Cœnuri*, prepared by the author for the Museum of the Royal College of Surgeons.]

Contributions towards a Monograph of the Species of *Annelides* belonging to the *Aphroditacea*, containing a List of the known Species, and a Description of some new Species contained in the National Collection of the British Museum. By W. BAIRD, M.D.

[Read June 1, 1865.]

"Animalium molluscorum in mari degentium vix centesimam partem bene novimus. Tanta autem est Naturæ in eorum forma et fabrica varietas, et tanta non modo inter genus et genus, sed inter generum extremas quoque species plerumque discrepantia, ut vel exercitissimi in his sæpe

dubii hæreant quonam hoc vel illud noviter repertum ex hac classe animal referant, quove nomine adpellent.”—*Pallas. Miscell. Zool.* p. 72.

AMONGST the *Aphroditacea* are several *Annelides* which are remarkable for their size and beauty. The genus *Aphrodita*, from which the family derives its name, was created by Linnæus to contain the brilliantly shining and splendidly iridescent-haired worm, commonly known by the name of the Sea-Mouse, and several other allied species which now form the types of distinct genera. Of these MM. Audouin and Milne-Edwards enumerate 6, and Grube 7; but later authors have so increased the number of species belonging to these, that Kinberg, a Swedish naturalist, and one of the most recent writers on the subject of the *Annelides*, has found it convenient to form almost each of the older genera into distinct families. In this paper I propose adopting his arrangement, as well as his terminology.

MM. Audouin and Milne-Edwards, and most succeeding authors, describe the animals belonging to the *Aphroditacea* as possessing *five* antennæ—one, single, in the centre, which they call the median antenna, or *antenne impaire*, two others (one on each side) which they denominate the intermediate, and two others, which they call the external. In addition to these organs connected with the head, are a pair of antenna-like organs which terminate the first pair of feet, instead of a fascicle of bristles, and which they describe by the name of the ventral cirri of the first pair of feet. Kinberg looks upon the single antenna in the centre as being a *tentacle* or feeler; the intermediate antennæ he considers the *true antennæ*; and the external ones he calls *palpi*; whilst the ventral cirri of the first pair of feet are denominated the *buccal cirri*.

Family I. APHRODITIDÆ.

(*Aphroditacea, Kinberg.*)

The family *Aphroditidæ* may be thus characterized:—Animals of an ovate or oblong form, convex on the back, with a distinct head in the form of a lobe, on the sides of which are situate one pair of eyes, and from the centre of which springs a small tentacle; underneath it there is a granular facial tubercle; no antennæ; two palpi, springing from the base of the head-lobe; buccal cirri short, tentacular cirri long; jaws cartilaginous, not very distinct; branchiæ indistinct; elytra 15 pairs, occurring on the 2nd, 4th, 5th, 7th, and all alternate segments of the body to the 25th, on the 28th, and 32nd.

The family thus characterized will now be restricted to four genera, all of which have strict relations with each other.

The genus *Aphrodita*, as now restricted, will contain those species in which the eyes are sessile, which have the back covered with a thick coat of felty hair, and in which the bristles issuing from the feet are all simple.

The genus *Hermione* will contain those species in which the eyes are peduncled, which have no, or only a very thin, covering of felty hair on the back, and in which the bristles of the feet are of two kinds—those on the dorsal branch being barbed like an arrow, and those on the ventral branch bidentate.

The genus *Aphrogenia* contains such species as have the eyes sessile, which have no felty covering on the back, and in which the bristles of the dorsal branch of the feet are uncinatè, not barbed, and those of the ventral branch bidentate.

The genus *Lætatonice* will contain those species which have the eyes peduncled; which have a felty covering on the back; and in which the bristles of the dorsal branch of the feet are densely barbed, and those of the ventral branch semipennate.

The known species belonging to the family are not numerous, only nine or ten having as yet been described; but, in determining the species contained in the national collection in the British Museum, some new forms have occurred to me which I think it is desirable should be described and placed on record.

Genus I. APHRODITA*, *Linnaeus*.

Haliþea (part) (*Haliþeæ simplices*), *Savigny*.

Eyes sessile; back covered with a thick, close felt of matted simple hair and membrane; setæ of ventral feet very numerous and iridescent, and, as well as all the other bristles, simple, not barbed or toothed.

Sp. 1. APHRODITA ACULEATA, *Linnaeus*.

This is the well-known Sea-Mouse, occurring in most of the seas of Europe. It is mentioned under various names by many of our earlier British writers, Mouffet, Sibbald, Molyneux, Dale, &c., as common on our own shores. *Linnaeus*, who first gave it

* *Aphrodite* (Ἀφροδίτη) is the Greek name for Venus. *Linnaeus*, who first established the genus, named it *Aphrodita*. Many succeeding authors, considering the termination to be not strictly classical, write it *Aphrodite*; but as the former is merely the Doric method of spelling the word, and as it is therefore not strictly incorrect, I adopt the *Linnaean* name.

its scientific name, called it, in the 1st edition of the 'Fauna Suecica,' 1746, *Aphrodita nitens*; but in the 10th edition of the 'Systema Naturæ,' 1758, he changed the specific name and called it *Aphrodita aculeata*, a name which he repeated in the 2nd edition of the 'Fauna Suecica,' 1761, and which has been adopted by all succeeding authors up to the present time. According to the strict law of priority, we ought perhaps to revert to the first-published name of the species, and name it for the future *Aphrodita nitens*; but in this instance I agree with the illustrious Pallas, who upon this very subject thus writes:—"III. Linnæus, qui primus generi nostro *Aphroditæ* nomen indidit, in prioribus 'Systematis Naturæ' editionibus hanc solam speciem, nomine *A. nitentis*, recensere solebat; eodemque eam titulo in 'Faun. Su.' ed. 1, n. 1284, in 'Mus. Adolpho-Frid.' vol. i. p. 43, inque 'Amœnitat. Acad.' vol. i. p. 326 habet. In 'Systematis Naturæ,' decima editione vero *A. aculeatæ* nomine eam distinxit, quod in altera Faunæ editione, n. 2199, servavit, et quo etiam ego, novandi minime cupidus, tantisper hic utar."—*Miscell. Zool.* p. 78.

The Sea-Mouse is so well known that it is unnecessary here to describe it. It has, from its brilliant iridescent colours, been the admiration of all observers. "The *Aphrodita aculeata*," says Linnæus, "reflecting the sunbeams from the depths of the sea, exhibits as vivid colours as the peacock itself, spreading its jewelled train." Cuvier, in his 'Règne Animal,' says that from its sides spring "bundles of flexible bristles, shining brilliantly with all the splendour of gold, and changing into all the hues of the rainbow. They do not yield in beauty either to the plumage of the humming-bird or to the most brilliant of the precious stones." "L'or, l'azur, le pourpre, le vert," say MM. Audouin and Milne-Edwards, in their 'Hist. Nat. du Littoral de la France,' p. 33, "se nuancent à leur surface de mille manières, et ces couleurs, souvent irisées, se trouvent dans une harmonie parfaite avec les reflets chatoyans et successifs des anneaux de leur corps. L'aile du Papillon n'a pas reçu une plus brillante parure que ces vers cachés au fond des eaux, et enfoncés quelquefois dans un limon noir et boueux."

There are many specimens in the collection of the British Museum, varying from 7 or 8 inches to 1 inch in length.

It is common in the coralline region, on almost all our British coasts, on the coast of France, on those of Holland, Sweden, Norway, N. America, and even, it is said, in the Baltic and Mediterranean. (Mus. Brit.)

Sp. 2. APHRODITA SERICEA.

Halithea sericea, Savigny, *Syst. Annelid.* p. 19.

This is looked upon as a rather doubtful species by Audouin and Milne-Edwards, and Grube considers it as in all probability only a smaller variety of *A. aculeata*. The splendidly iridescent hairs, however, are wanting in this species, instead of which these appendages are white, while the spines on the dorsal branch of the feet are of a fine green. Savigny gives no habitat for this species, and no author has recorded its appearance since his time. A specimen, however, exists in the Paris Museum.

Sp. 3. APHRODITA BOREALIS, Johnston in *Ann. Nat. Hist.* vol. iv. p. 370, t. 10. fig. 1-13, and *Catalogue of British Non-parasitical Worms in the British Museum*, p. 104, tab. 10. f. 1-13.

This is a very small species, and we have only one specimen existing in the collection of the British Museum. It certainly belongs to the restricted genus *Aphrodita*, and has been considered by Grube to be synonymous with Risso's *Halithea aurata* from the South of Europe. Risso's description, however, is so vague and unsatisfactory, that I find it impossible to identify it with any species I have yet seen.

The *A. borealis* is a native of the seas of Scotland, having been taken by Dr. Johnston in Berwick Bay. (Mus. Brit.)

Sp. 4. APHRODITA ALTA, Kinberg, *Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar*, 1855, p. 381; *Fregatten Eugenies Resa*, p. 2, tab. 1. fig. 1, 1 A-1 H.

Kinberg states the size of this species to be 27 millim. long; and he mentions that the hairs of the ventral branch of the feet are short and white.

It was taken in the South Atlantic, near Rio Janeiro, at a depth of from 20 to 30 fathoms.

Sp. 5. APHRODITA LONGICORNIS, Kinberg, *l. c.* p. 382; *Fregatt. Eugen. Resa*, p. 4, tab. 1. fig. 3, 3 B-3 F.

This species differs from the last in having the hairs on the ventral branch of the feet of a brassy-green hue, and in the tentacle on the cephalic lobe being very long. Kinberg mentions the size to be that of the *A. aculeata*, and says it was taken in the South Atlantic Ocean, off the mouth of the River Plate.

Sp. 6. APHRODITA AUSTRALIS, sp. nov.

Body ovate oblong, $3\frac{1}{2}$ to 4 inches long, and from $1\frac{3}{4}$ to 2 inches broad, narrower posteriorly, convex on the back, which is covered with a thick felty substance, consisting of a thinnish membrane and numerous fine hairs matted together, concealing the elytra;

head-lobe small, rounded; tentacle very short; palpi of considerable length, yellowish. Feet-bearing segments of body 42, feet 42 pairs, biramous, ventral branch strong and much corrugated, obtusely rounded at extremity, inferior cirrus rather strong and of considerable size. Bristles of this branch strong, of a bronzed colour, simple, disposed in two fascicles, of which the inferior are short and lighter coloured, the superior much stronger and not numerous. Upper or dorsal branch of feet furnished with two fascicles of bristles; the lower consisting of very numerous, simple, and slender hairs, presenting, as in *A. aculeata*, an iridescent fringe along the sides, but not nearly so beautiful as in the European species, being more of a bronzed metallic hue. The upper fascicle of bristles penetrate the felty covering, and lie down on the back. They are very long, each being at least 14 lines in length. They are of a pale colour with a slightly metallic hue, become slender at the extremity, and are simple. The dorsal cirri are stout, setaceous, and white. The ventral surface of the animal is brownish-coloured and rough, with very numerous, small points or projections.

This species resembles very much the European species *A. aculeata*, and is evidently the Australian representative of our common Sea-Mouse. We have two specimens in the collection, one from Port Lincoln, collected and presented by Mr. George French Angas, and another (in bad condition, unfortunately) from Van Dieman's Land.

Hab. Australian Seas. (Mus. Brit.)

Genus II. HERMIONE, *Blainville, Dict. Sc. Nat. art. Vers.*
vol. lvii. p. 457.

Halitææ Hermionæ, Savigny, Syst. Annelid. p. 20.

Eyes peduncled, the peduncles attached under the margin of the head; back more or less free from covering. Elytra bearing feet armed with barbed bristles on dorsal branch; bristles of ventral branch few and bidentate or forked.

Savigny, Blainville, Audouin and Milne-Edwards, Johnston, Grube, and others, all give as a decided character of the genus *the back being naked* and showing the elytra, instead of being covered with a felty coat. This, however, I consider to be a character upon which not much reliance is to be placed, as in the first species, *Hermione hystrix*, we have a specimen in the collection brought by Mr. M'Andrew from the Canaries, in which the back is entirely covered with a thin coat of matted hair and membrane, which completely conceals the elytra from view; and in another

species (to be here described), which evidently belongs to this genus, the back is also covered with a coat composed of matted hairs. This character must therefore be modified as I have given it in the diagnosis.

Savigny, in his System of Annelides, placed the species upon which the genus was founded in a tribe, which he designates *Halithea Hermionæ*. De Blainville was the first who formed the genus, and called it, in accordance with the indication of Savigny, *Hermione*.

Sp. 1. HERMIONE HYSTRIX.

Halithea hystrix, Savigny, *Syst. Annelid.* p. 20.

In general the elytra of this species are quite or nearly exposed; but, in all the specimens I have examined, the feet are more or less covered with sordes, apparently the remains of a felty coat which most probably clothed the whole back; and, as I have mentioned above, we have one specimen from the Canaries, the whole back of which is covered with the same material. The *H. hystrix* is a native of the seas of Europe, and occurs pretty commonly on our own coasts. (Mus. Brit.)

Sp. 2. HERMIONE HYSTRICELLA, *Quatrefages*; *Cuv. Règn. An., edit. Croch.*, *Annelides*, t. 19. f. 1. 1a-f.; *Kinberg, l. c.* p. 382.

A figure only of this fine species is given by Milne-Edwards in the work just quoted, and he refers for a description to an unpublished work upon the *Annelides* by M. Quatrefages; but Kinberg, who appears to have seen the species, gives a description of it in his paper in the Swedish Transactions, and a figure in the 'Fregatt. Eugen. Resa.' It is nearly allied to the preceding, but excels it in colours. According to Kinberg, it inhabits the Mediterranean on the coast of Syria.

Sp. 3. HERMIONE CHRYSOCOMA, sp. nov.

Body elongate-ovate, of about 12 or 13 lines long, and at the broadest part about 5 lines in diameter. The back is covered with a thin skin, composed, as in other species, of a fine matted felt of delicate brown hairs. Head small; eyes peduncled; tentacle small; palpi short, setaceous, brownish-coloured. Scales thin, overlapping each other on the dorsal surface. The feet appear to be 32 pairs; but those at each extremity are so small that it is difficult to count them satisfactorily. They are, as usual, biramous and furnished with two kinds of bristles. Those on the dorsal branch are rather long, and of a golden-brown colour. They are all of similar form, are curved, and somewhat flattened

like the blade of a scimitar at the upper half of their length, and strongly toothed on the convex edge for some distance along the upper portion. These teeth are about 14 or 15 in number, and the last, which forms the point, is longer than the others, and sharp pointed. The bristles of the ventral branch are shorter and rather darker coloured than those of the dorsal branch, and are bidentate or forked at the extremity, the teeth which form the lower part of branch being short and stout. Both branches of feet are stout and blunt-pointed. The under surface of the body is dark brown, and roughened with numerous raised vesicular points. The upper cirri are small; the inferior are short.

This species may possibly be the *Halithea aurata* of Risso; but, as I have said before, Risso's species cannot be determined, and as the particular locality where our specimen (there is only one) was found is not specified, I think it better to distinguish it by a new name.

Hab. South of Europe. Collected by the late P. B. Webb, Esq., joint author of the 'Natural History of the Canaries.' (Mus. Brit.)

Genus III. *APHROGENIA*, *Kinberg, Öfversigt Kongl. Vetenskaps-Akademiens Förhandlingar*, 1855, p. 382.

Eyes sessile, placed upon the basal part of the tentacle, lateral; no felty covering on the back. Bristles of the dorsal branch of the feet uncinat, not barbed; those of the ventral branch few in number, bidentate.

I have not seen any species belonging to this genus. *Kinberg* describes only one.

Sp. 1. *APHROGENIA ALBA*, *Kinberg, l. c.*; *Fregatt. Eugen. Res.* p. 6, tab. 2. fig. 6, 6 A-6 H.

This is a native of the seas of the West Indies, having been collected at the island of St. Thomas by M. Werngren.

Genus IV. *LÆTMATONICE*, *Kinberg; Fregatt. Eugen. Resa*, p. 7.

Lætmatonice, *Kinberg, Öfversigt Kong. Vet. Akad.* 1855, p. 382.

Eyes supported on peduncles which spring from the anterior margin of the cephalic lobe; back covered with a felty coat; bristles of elytra-bearing feet barbed, those of ventral branch semi-pennate.

Sp. 1. *LÆTMATONICE FILICORNIS*, *Kinberg; Fregatt. Eugen. Resa*, p. 7, tab. 3. fig. 7, 7 A-7 H.

Lætmatonice filicornis, *Kinberg, Öfversigt Kong. Vet. Akad.* 1855, p. 382.

This species I do not know; it is a native of the western and northern coasts of Sweden.

Sp. 2. *LÆTMATONICE KINBERGI*, sp. nov.

Body oval, from 12 to 15 lines long, and from 4 to 5 in breadth at thickest part. Back covered with a felty coat composed of a thin membrane and numerous fine hairs matted together, which are generally obscured with sordes, but when cleaned from it are smooth and simple, colourless, and not very numerous. Head-lobe constricted in the middle by a deep groove on each side. Tentacle short and conical. Palpi white, long, and setaceous. Elytra 15 pairs, oval, thin, membranous-looking, and smooth, overlapping each other the whole length of the back. Cirri rather long and club-shaped at the extremity. Feet 30 pairs, biramous; branches widely apart. Dorsal branch rounded and rather short; the bristles issuing from it, about ten or twelve in number, long, apparently furnished with a loose joint at about the upper third of its length. They are of a bronzed brown colour, and barbed near the extremity, which is straight and sharp pointed. The ventral branch of the foot is long, conical, obtuse-pointed, and the bristles issuing from it, about five or six in number, are of considerable length, though much shorter than those of dorsal branch. They are more slender also, are curved at the point, have a tooth at some distance from the extremity, and between the teeth and point are rather densely plumose or feathered. The edges of this ventral branch, and indeed the whole surface, are beset with a number of rounded vesicular bodies, placed on short pedicels. The under surface of the body is greyish-coloured, and covered all over with small vesicles, which give it a rough appearance.

This species of *Aphrodita* resembles in general appearance the *Aphrodita borealis* of Johnston; but the fascicle of bristles of the ventral branch of the foot and those of the dorsal also are totally different from those figured by Dr. Johnston. In the latter species also the elytra are quite different. In the figure of *A. borealis* given by Dr. Johnston they do not nearly meet on the middle of the back, while in the present species they overlap each other along the whole length of the dorsal surface. It differs chiefly from *L. filicornis* of Kinberg in the length of the tentacle, and the shape of the cephalic lobe.

Hab. Dredged in considerable numbers in the North Sea, off the Shetland Islands, by J. G. Jeffreys, Esq., in July 1864. (Mus. Brit.)

Family II. IPHIONIDÆ.

(Iphionea, *Kinberg*; Polynoæ Iphionæ, *Savigny*.)

Facial tubercle small, placed between two antennæ, which are produced from the surface of the face; no tentacle; palpi thick; tentacular and buccal cirri slender; elytra reticulated.

There is only one genus as yet belonging to this family, which *Kinberg*, adopting the divisional denomination indicated by *Savigny*, has named *Iphione*. The typical species is the *Polynoë muricata* of *Savigny*, so beautifully represented by that author in his great work on Egypt.

Genus IPHIONE, *Kinberg*, *l. c.* p. 383.

Polynoë Iphione, *Savigny*, *Syst. Annelid.*

Eyes four, sessile; cephalic lobe produced from between the basal joints of the antennæ, which are longer than the lobe itself; elytra 13 pairs. The setæ of the dorsal branch of feet are fine subulate hairs: bristles of ventral branch placed close to them, and serrate.

Sp. 1. IPHIONE MURICATA.

Polynoë muricata, *Savigny*, *l. c.* Atlas, tab. 3. figs. 1, 1. i., 1. ii.

This is a well-marked species, and resembles at first sight a species of *Chiton*, with which, as *Savigny* says, it is often confounded as it creeps slowly upon the stones under the water. It is a native of the shores of the Red Sea, as also of the coast of the Isle of France (*Mus. Brit.*).

Sp. 2. IPHIONE OVATA, *Kinberg*, *l. c.* and *Fregatt. Eugen. Resa*, p. 8, tab. 3. figs. 8, 8 A-8 E.

I have not seen this species, but it appears quite distinct. *Kinberg* says it is a native of the Pacific Ocean, having been taken at Honolulu, one of the Sandwich Islands.

Sp. 3. IPHIONE SPINOSA, *Kinberg*, *Fregatt. Eugen. Resa*, p. 8, tab. 10. fig. 46.

Hab. Port Natal, *Wahlberg*.

Family III. POLYNOIDÆ.

(Polynoina, *Kinberg*, Polynoæ simplices, *Savigny*.)

No facial tubercle; tentaculum in general long; two antennæ; jaws large and horny; eyes four in number; elytra 10 (?) or 12 to 35 pairs; segments of body not bearing elytra, furnished with a dorsal cirrus; no branchiæ.

Genus I. LEPIDONOTUS, *Leach* (s. str. *Kinberg*).

Bases of antennæ produced from the anterior margin of the

cephalic lobe; 12 (-13 ?) pairs of elytra, covering the back wholly; body short.

Sp. 1. *LEPIDONOTUS SQUAMATUS*.

Aphrodita squamata, *Linnaeus*, *Syst. Nat.* 10th ed. p. 655.

The *Aphrodita punctata* of Müller, *A. clavigera* of Fremenville, and *Polynoë scutellata* of Risso are either identical with or mere varieties of this species.

This well-known European species may be taken as the type of the genus.

Hab. Northern Seas, British coasts, coast of France and Mediterranean (*Mus. Brit.*).

Sp. 2. *LEPIDONOTUS CLAVA*.

Aphrodita clava, *Montagu*, *Linn. Trans.* ix. 108, tab. 7. fig. 3.

This species was first made known by Montagu, and since then has been more fully described by Dr. Johnston in his lately published, posthumous "Catalogue of British non-parasitical Worms in the Collection of the British Museum."

Hab. Southern coasts of England—Devon, Cornwall, &c. (*Mus. Brit.*).

Sp. 3. *LEPIDONOTUS POMAREÆ*, *Kinberg*, *l. c.* p. 383; and *Fregatt.*

Eugen. Resa, p. 10, tab. 3. figs. 9, 9 A-9 H.

Hab. Tahiti, *Kinberg*.

This and the following nine species have been described by Kinberg as belonging to the genus *Lepidonotus*, as restricted by him. I have not had an opportunity of seeing any of them.

Sp. 4. *LEPIDONOTUS SOCIALIS*, *Kinberg*, *l. c.*, and *Fregatt. Eugen.*

Resa, p. 10, tab. 3. figs. 10, 10 B-10 G.

Hab. Island of Eimeo, in the Pacific Ocean, *Kinberg*.

Sp. 5. *LEPIDONOTUS JACKSONI*, *Kinberg*, *l. c.* and *Fregatt. Eugen.*

Resa, p. 11, tab. 3. figs. 11, 11 B-11 H.

Hab. Port Jackson, *Kinberg*.

Sp. 6. *LEPIDONOTUS MARGARITACEUS*, *Kinberg*, *l. c.*, and *Fregatt.*

Eugen. Resa, p. 11, tab. 3. figs. 12, 12 A-12 H, tab. 10. fig. 49.

Hab. Guayaquil, South America, *Kinberg*.

Sp. 7. *LEPIDONOTUS JOHNSTONI*, *Kinberg*, *l. c.* 384, and *Fregatt.*

Eugen. Resa, p. 12, tab. 4. figs. 13, 13 A-13 H, tab. 10. fig. 50.

Hab. Islands near to Panama, *Kinberg*.

Sp. 8. *LEPIDONOTUS WAHLBERGI*, *Kinberg*, *l. c.* and *Fregatt. Eu-*

gen. Resa, p. 12, tab. 4. figs. 14, 14 A-14 H.

Hab. Port Natal, *Wahlberg*.

Sp. 9. *LEPIDONOTUS CÆRULEUS*, *Kinberg, l. c.*, and *Fregatt. Eugen.*

Resa, p. 13, tab. 4, figs. 15, 15 B-15 H.

Hab. Rio Janeiro, *Kinberg*.

Sp. 10. *LEPIDONOTUS HAVAICUS*, *Kinberg, l. c.*, and *Fregatt. Eugen.*

Resa, p. 14, tab. 4, figs. 17, 17 A-17 H.

Hab. Honolulu, Pacific Ocean, *Kinberg*.

Sp. 11. *LEPIDONOTUS STRIATUS*, *Kinberg, l. c.*, and *Fregatt. Eugen.*

Resa, p. 14, tab. 4, figs. 18, 18 B-18 H.

Hab. Port Jackson, *Kinberg*.

Sp. 12. *LEPIDONOTUS INDICUS*, *Kinberg, l. c.*, and *Fregatt. Eugen.*

Resa, p. 15, tab. 4, figs. 19, 19 A-19 H, tab. 10, fig. 52.

Hab. Straits of Banka, *Kinberg*.

Sp. 13. *LEPIDONOTUS SAVIGNYI*.

Polynoë Savignyi, *Grube, Annulata Oerstediana*, p. 19.

Hab. Callao, *H. Kröyer*.

This and the following species were described by Grube in his enumeration of species of *Annelides* in the collections of Oersted and Kröyer. I have not seen either of them.

Sp. 14. *LEPIDONOTUS TOMENTOSUS*.

Polynoë tomentosa, *Grube, l. c.*

Hab. Puntarenas, Costa Rica, *Oersted*.

Sp. 15. *LEPIDONOTUS FUSCICIRRUS*.

Polynoë fuscicirra, *Schmarda, Neue wirbellose Thiere*, ii. p. 152.

tab. 36, fig. 311.

Hab. Bay of Belligam, island of Ceylon, *Schmarda*.

This and the two following species are described and figured by Schmarda in his description of new species of *Annelides* discovered by him in his voyage round the world. I only know them from Schmarda's figures and descriptions.

Sp. 16. *LEPIDONOTUS POLYCHROMA*.

Polynoë polychroma, *Schmarda, l. c.* p. 153, t. 36, f. 307.

Hab. East coast of New Zealand, *Schmarda*.

Sp. 17. ? *LEPIDONOTUS ANTILLARUM*.

Polynoë Antillarum, *Schmarda, l. c.* p. 158.

Hab. Port Royal, Jamaica, *Schmarda*.

This species is rather loosely described by Schmarda; so that it is difficult exactly to place it in its proper genus. Schmarda himself says that he was not able to determine its proper place.

Sp. 18. LEPIDONOTUS IMPATIENS.

Polynoë impatiens, *Savigny, Syst. Annelid.* 24 ; *Atlas*, t. 3. fig. 2.

Hab. Red Sea, *Savigny*.

Sp. 19. LEPIDONOTUS GLAUCUS.

Polynoë glauca, *Peters, Monatsbericht der königl. Preuss. Akad. der Wissenschaft. Berlin*, 1854, p. 610.

Hab. Haven of Mossambique, *Peters*.

Sp. 20. LEPIDONOTUS CLYPEATUS.

Polynoë clypeata, *Grube, Archiv für Naturg.* 1860, p. 71, t. 3. f. 1.

Hab. Mediterranean, Adriatic and near the Scilly Islands, *Grube*.

Sp. 21. LEPIDONOTUS SEMITECTUS.

Lepidonota semitecta, *Stimpson, Proceedings of Academy of Natural Sciences of Philadelphia*, 1855, vol. vii. p. 393.

Hab. Simon's Bay, Cape of Good Hope.

Sp. 22. LEPIDONOTUS SINCLAIRI, sp. nov.

Head-lobe rather small ; tentacle unfortunately broken, only the base remaining. Antennæ produced from the anterior margin of cephalic lobe, dark-coloured at their bases, which are the only parts remaining. Palpi stout, white, setaceous, and smooth. Elytra 12 pairs, pale-coloured, mottled with black ; rounded, thin, covered all over with minute points, with some larger, raised, and rounded punctations intermixed ; ciliated on outer margin. Back completely covered. Feet biramous : ventral branch the larger of the two, with a fascicle of yellow bristles, stout, slightly curved at the point, and serrated a short distance below the apex. Dorsal branch small ; bristles short, slender, sharp-pointed, and minutely serrated nearly their whole length. Dorsal cirri conical, setaceous, smooth ; anal cirri rudimentary.

Length about 9 lines ; breadth 2 lines.

Hab. New Zealand. Named after the late Dr. Andrew Sinclair, to whom we are indebted for the only specimen we possess (*Mus. Brit.*).

Sp. 23. LEPIDONOTUS OCLATUS, sp. nov.

Animal about $1\frac{1}{2}$ inch long, and, including the setæ, about $\frac{1}{2}$ an inch broad, nearly equal in breadth at each extremity. It is of a light-yellow colour.

Head rather small ; tentacle and antennæ rather short, of nearly equal length, club-shaped near extremity, which terminates suddenly in a slender point. Palpi stout, conical, setaceous, only a little longer than the tentacle and antennæ. Feet stout, bira-

mous. Bristles of dorsal branch few in number, short, straight, sharp-pointed, and finely striated across. Those of ventral branch are more numerous, much stronger, slightly curved at the point, but becoming broader near the extremity, where it is serrated, the teeth of the serrations being long and prominent. The elytra are 12 pairs, rather rounded, extending laterally beyond the body; smooth on the edges, roughly tuberculated on the surface, and near the centre marked with a large, round, black spot, like an eye. Dorsal cirri of considerable length, incrassated or club-shaped beneath the extremity, which is marked by a black ring, and, like the tentacle and palpi, terminates suddenly in a sharp point. Ventral cirri nearly reaching the extremity of the ventral branch of the foot, slightly incrassated beneath the extremity, which terminates in a fine point. Anal cirri of considerable length, and, like the dorsal cirri, club-shaped near the extremity, black-ringed and sharp-pointed.

Hab. Australia (*Mus. Brit.*).

For our specimen we are indebted to Dr. Bowerbank, who obtained it from the seas of Australia.

Sp. 24. *LEPIDONOTUS STELLATUS*, sp. nov.

This animal is about 8 lines in length, and 3 in breadth. The dorsal surface and elytra are of a somewhat uniform olive-colour. The ventral surface is yellow. Head rather small; tentacle unfortunately destroyed. Antennæ slender, rather short; palpi stout, conical, short, about the same length as the antennæ. Feet stout, biramous; bristles of ventral branch longer than those of the dorsal, bidentate at the point, and serrated a little below its apex. Bristles of dorsal branch short, straight, and serrated throughout their whole length. Dorsal cirri about the length of the feet and bristles, setaceous. Elytra 12 pairs in number, oval, marked across one half with two divaricating rows of pustules. When seen under the microscope, each scale is very prettily marked with numerous lucid dots ranged in rounded spots, like stars. The margins are quite smooth. Segments of body 26 in number; last segment terminated by two short anal cirri.

Hab. Australia (*Mus. Brit.*).

For a specimen of this species we are indebted to Dr. Bowerbank, who received it from the Australian Seas.

Sp. 25. *LEPIDONOTUS BOWERBANKII*, sp. nov.

Animal 6 lines in length, and about 2 broad. The colour is

greyish on the back, and yellow underneath. Head, antennæ, and palpi much the same as in preceding species (*L. stellatus*). The bristles of the ventral branch are not bidentate at the point, but are more loosely or longly toothed or serrated below the apex. The bristles of the dorsal branch are slender, and finely serrated and striated across. The elytra are 12 pairs in number, the upper ones nearly round, becoming more ovate as they descend. When seen by the microscope, the surface is covered over with very minute granulations, and the external margin is densely ciliated. They are of a light colour, but speckled all over with light fawn-coloured spots.

Hab. Australia (*Mus. Brit.*).

For a specimen of this species we are indebted to Dr. Bowerbank, who received it from the Australian seas.

Genus II. HALOSYDNA, *Kinberg*, *l. c.* 384.

Bases of antennæ produced from the anterior margin of the cephalic lobe; elytra from 15 to 35 pairs (15 to 21, *Kinberg*) not covering the whole of the back; body long.

Sp. 1. HALOSYDNA BREVISETOSA, *Kinberg*, *l. c.* 385, and *Fregatt. Eugen. Resa*, p. 18, tab. 5. figs. 25, 25 A–25 H.

Hab. Coast of California, *Kinberg*, *Cuming* (*Mus. Brit.*).

This is a very pretty species, and we are indebted to Mr. Cuming for our specimens.

Sp. 2. HALOSYDNA VIRGINI, *Kinberg*, *l. c.* 384, *Fregatt. Eugen. Resa*, p. 15, tab. 5. figs. 20, 20 A–20 H, tab. 10. fig. 53.

Hab. Honolulu, Sandwich Islands, *Kinberg*.

Sp. 3. HALOSYDNA AUSTRALIS, *Kinberg*, *l. c.* 385, and *Fregatt. Eugen. Resa*, p. 16, tab. 5. figs. 21, 21 A–21 H, tab. 10. fig. 54.

Hab. Mouth of the River Plate, South America, *Kinberg*.

Sp. 4. HALOSYDNA PATAGONICA, *Kinberg*, *l. c.* 385, and *Fregatt. Eugen. Resa*, p. 17, tab. 5. figs. 23, 23 A–23 H.

Hab. York Bay, Straits of Magellan, *Kinberg*.

Sp. 5. HALOSYDNA PARVA, *Kinberg*, *l. c.* 385, and *Fregatt. Eugen. Resa*, p. 17, tab. 5. figs. 24, 24 A–24 H.

Hab. Valparaiso; Chincha Islands; San Lorenzo, near Callao, *Kinberg*.

Sp. 6. HALOSYDNA BRASILIENSIS, *Kinberg*, *Fregatt. Eugen. Resa*, p. 16, tab. 5. figs. 22, 22 A–22 H.

Hab. Rio Janeiro, *Kinberg*.

Sp. 7. HALOSYDNA LONGICIRRA.

Polynoë longicirra, *Schmarda, Neue wirbell. Thiere*, ii. 152, t. 36. fig. 309.

Hab. Near Belligam, island of Ceylon, *Schmarda*.

Sp. 8. HALOSYDNA LOBOCEPHALA.

Polynoë lobocephala, *Schmarda, l. c.* 157, t. 36. fig. 314.

Hab. Port Royal, Jamaica, *Schmarda*.

Sp. 9. HALOSYDNA GELATINOSA.

Polynoë gelatinosa, *Sars, Beskrivelser*, p. 63, tab. 9. fig. 25.

Hab. Bergen, coast of Norway, *Sars*.

Sp. 10. HALOSYDNA MÜLLERI.

Polynoë Mülleri, *Grube, Annulata Oerstediana*, p. 22.

Hab. Valparaiso, *Kröyer*.

Sp. 11. HALOSYDNA PUNCTULATA.

Polynoë punctulata, *Grube, l. c.* p. 23.

Hab. Rio Janeiro, *Kröyer*.

Sp. 12. ? HALOSYDNA CLAVATA.

Polynoë clavata, *Grube, l. c.* p. 22.

Hab. Christianstad, isle of Santa Cruz, West Indies, *Oersted*.

Sp. 13. ? HALOSYDNA IMBRICATA.

Aphrodita imbricata, *Linneus, Syst. Nat.* edit. 12, p. 1084 (*fide Johnston, Cat. Brit. Non-parasit. Worms*, p. 118).

Sp. 14. ? HALOSYDNA FLOCCOSA.

Polynoë floccosa, *Savigny, Syst. des Annélides*, 23.

Hab. West coast of France, *Savigny*.

Sp. 15. ? HALOSYDNA CHILENSIS.

Polynoë Chilensis, *Blanchard, Gay's Historia fisica y politica de Chile*, tom. iii. p. 15, *Atlas, Anillados*, tab. 1. figs. 1, 1a.

Hab. San Carlos, coast of Chiloe, *Gay*.

Sp. 16. ? HALOSYDNA VIRENS.

Polynoë virens, *Blanchard, l. c.* p. 16, tab. 1. fig. 2.

Hab. Calbuco, coast of Chiloe, *Gay*.

I quote these two species with doubt as to their true generic position, because the figures do not correspond with the descriptions. In *Polynoë chilensis*, M. Blanchard describes the number of elytra as being 16 pairs, "covering the back entirely." In his figure he depicts the animal as having 29 pairs of elytra, which leave the back naked in the centre! In *P. virens* he describes the animal as having 35 pairs of elytra, while he figures it as possessing 56 or 57!

Sp. 17. HALOSYDNA MALLEATA.

Polynoë malleata, *Grube, Archiv f. Naturg.* 1855, p. 81.

Hab. Trieste, *Grube.*

Sp. 18. HALOSYDNA TUTA.

Polynoë tuta, *Grube, l. c.* p. 82.

Hab. Sitka, *Grube.*

Sp. 19. HALOSYDNA VITTATA.

Polynoë vittata, *Grube, l. c.* p. 82. 3.

Hab. Sitka, *Grube.*

In the 'Zoological Proceedings' for April 1863, I described four species of *Lepidonotus*, collected at Vancouver Island by J. K. Lord, Esq., naturalist attached to the British North American Boundary Commission. They were also figured for the Report to be issued by that commission, which, however, has not yet been published.

Owing to a slight mutilation of some of the parts, the descriptions of these species were in some respects slightly incorrect and in others deficient in precision. They all belong to the sub-generic group designated *Halosydna* by Kinberg; and I take the opportunity now afforded me of a more minute re-examination, to give a somewhat more detailed account of them. This examination has also enabled me to alter one of the generic characters as given by Kinberg. This author states distinctly the number of elytra to be from fifteen to twenty-one. The interesting species, however, *H. Lordi*, possesses thirty-five pairs of elytra; and as in other respects it agrees in generic characters with *Halosydna*, I conclude that the exact number of elytra is not a certain character, and only proves that Kinberg had not examined any species which was furnished with a larger number than twenty-one.

Sp. 20. HALOSYDNA INSIGNIS.

Lepidonotus insignis, Baird, Proc. Zool. Soc. April 1863.

This species is rather more than 3 inches long, and is nearly $\frac{1}{2}$ an inch in breadth, exclusive of the setæ of the feet. The head is small, and the anterior eyes are larger than the posterior. The proboscis is large and wrinkled, and the jaws are of a reddish-brown colour. The tentacle is rather club-shaped, blunt at the tip, and ringed with black. The antennæ, which are produced from the anterior margin of the cephalic lobe, are a little shorter than the tentacle, are slightly incrassated below the point, ringed with black, and terminate in a fine white setaceous point. The palpi are conical, white, setaceous at the extremity, and are very

long, being at least three times the length of tentacle or antennæ. The buccal cirri are about the same length as the antennæ, and are ringed with black and white. The body on the dorsal surface is of a whitish colour, marbled with black. The sides, which are covered by the elytra, are white; and a broad, black, interrupted line runs along the back, throughout its whole length. The under or ventral surface of the body is of a bluish-black colour, and a narrow uninterrupted white line runs down through the centre. The elytra are 18 pairs in number, are oval, white, with black dots on the outer sides and centre, and marked with a black semicircular patch on the inner side. They do not overlap each other except near the head, being wide apart on the rest of the body, and leaving the middle of the back uncovered. The feet are very prominent, stout, rounded, conical, encircled with fine, black, circular lines, and biramous. The ventral branch is very much the larger, and the bristles are stout and amber-coloured. They are rather long, and terminate in a slightly curved point, beneath which they are for a short distance strongly serrated on both sides. The dorsal branch of the foot is small, and the setæ sent off from it are few in number, of a white colour, short, straight, and very finely serrated on each margin. The dorsal cirrus is tolerably long and sharp-pointed; it is pedunculated, the peduncle being stout, conical, and of a deep black colour. The ventral cirrus is short, conical, and sharp-pointed; and at the base of each foot there is a blunt papilla at each corner, of the same dark colour as the under surface of the body. The anal cirri are short, but tolerably stout, and ringed with black and white.

Hab. Esquimalt Harbour, Vancouver Island, *J. K. Lord* (*Mus. Brit.*).

Sp. 21. HALOSYDNA GRUBEI.

Lepidonotus Grubei, *Baird, Proc. Zool. Soc.* April 1863.

Animal about 2 inches long, and $\frac{1}{2}$ inch broad. Head small, broad: eyes very small, placed obliquely near each other; tentacle unfortunately deficient; the peduncle, however, which remains, is thick and marked at the base, on anterior margin, with a small, round, raised, black spot. Antennæ produced from the anterior margin of cephalic lobe, rather short, somewhat club-shaped and white at the extremity, broadly ringed with black at their base and on anterior portion; palpi conical, thick at the base, of a uniform light-brown colour, except at the tip, which is white, and a little longer than the antennæ. The buccal cirri are

longer than the palpi, clubbed at extremity, and ringed with black at the base and at a short distance from the point. The back is partially uncovered by the elytra, and is marked by a broad blotch of black in the centre of each segment, striated or as it were wrinkled across and marked with fainter blotches of a dark colour. The under surface of the body is of a uniform brownish colour. The elytra are 18 pairs in number, are all nearly round, rough on the upper surface with small tubercles, edged by a raised margin, and mottled with black and white. They are smallest at the anterior extremity. The dorsal cirri are clubbed and white at extremity, about equal in length to the feet and bristles; they are pedunculated, and marked with a black spot at the base where they issue from the peduncles, and are ringed with black at a short distance from the point. The inferior cirri are short, and acute at the point. The feet are stout, broad, and biramous. The bristles of ventral branch are disposed in two fascicles, are of a bright yellowish-brown colour, and are all similar in structure. They are uncinatate at the point, and at a short distance from it are strongly serrated for a short way down. The dorsal branch of the foot is small, and the bristles of that branch are very short and serrated across for the upper two-thirds of their length. At the base of the feet, where they are attached to the body of the animal, there is a small papilla projecting at one corner, and occurring in each foot.

Hab. Esquimalt Harbour, Vancouver Island, *J. K. Lord* (*Mus. Brit.*).

Sp. 22. HALOSYDNA LORDI.

Lepidonotus Lordi, *Baird, Proc. Zool. Soc.* April 1863.

This species is about 3 inches in length, and rather more than $\frac{1}{3}$ rd of an inch in diameter at the broadest part of the body. It tapers gradually from the head to the tail, which is only about $\frac{2}{15}$ ths of an inch broad. The colour is of a light brown, a broad line of a much darker brown running along the whole length of the centre of the back. The head is broad and short; the eyes are small, placed obliquely near to each other. The tentaculum and antennæ are very short, about equal in length, and white; the bases of the antennæ are produced from the anterior margin of the head-lobe, and the tentaculum occupies a deep emargination on the front of the lobe. The palpi are stout, short, conical, of a light colour, but close to the point ringed with black, the point itself being quite white. They are a little longer than the tentaculum and antennæ. The feet are tolerably stout; the two

divisions of which they are composed placed very close to each other. The bristles of the elytra- and cirri-bearing feet are similar in structure; those of dorsal or upper division stout, smooth, somewhat curved as they approach the point, enlarged and flattened and uncinatè at the point; those of ventral or lower division a little more slender, slightly enlarged near the point, which is straight, blunt, and striated across. The bristles of both bundles are nearly of equal length, and two or three similar to those of ventral division are mixed up with the bundle of bristles of dorsal division. The two spines are stout, rather long, straight, and blunt-pointed. All these organs are of a yellow colour. The dorsal cirri are white, rather short, about equal in length to the foot itself; the ventral cirrus very short. The elytra are 35 pairs in number, thin, membranous, and of a light brown colour. The anterior pair overlap each other slightly in the centre of the back; but for the rest of the length of the body the middle portion of the back is uncovered.

Hab. Vancouver Island, *J. K. Lord* (*Mus. Brit.*).

A good many specimens of this interesting species were taken by Mr. Lord at Macaulay's Point, Vancouver Island; and they were all found nestling under the shell, and occasionally coiling themselves under the foot of the animal of the *Fissurella cratitia*. I have named it after its discoverer, J. K. Lord, Esq.

Sp. 23. *HALOSYDNA FRAGILIS*.

Lepidonotus fragilis, *Baird*, *Proc. Zool. Soc.* April 1863.

This species appears, from a re-examination of the specimens in the collection, to belong to the genus *Halosydna* of Kinberg. It is exceedingly brittle, and, owing to the specimens brought home by Mr. Lord being broken into several pieces, it is impossible to describe the species accurately. The head is rather small, and the eyes are placed obliquely, but not very near to each other. The tentaculum and antennæ, with the palpi and buccal cirri, are all short, nearly of equal length, and almost white or colourless.

The elytra are very deciduous, and appear to be numerous, and to leave the centre of the back uncovered; but it is impossible to state the number, as it is extremely difficult to be able to fit the fragments into which the body is broken to the respective individuals. The whole body of the worm appears destitute of any markings or colour. The feet are moderate in size and are biramous. The ventral branch is much the larger, and the bristles belonging to it are of a light amber-colour, uncinatè or hooked at the point, but quite smooth and not toothed or serrate on the

edges. The dorsal branch is very small, and the bristles are short, straight, and simple, not toothed or serrate on the edges. The dorsal cirri are stout and club-shaped at the extremity, to which is appended a small flagellum, or narrow, loosely floating process. They appear to become nearly obsolete on the feet of the lower portion of the body. The ventral cirri are so exceedingly small as to be scarcely perceptible. The length of the species, judging from the fragments, might be about $2\frac{1}{2}$ inches, and the breadth about 4 lines.

Hab. Esquimalt Harbour, Vancouver Island, *J. K. Lord* (*Mus. Brit.*).

This species was found by Mr. Lord adhering to a large species of Starfish; but he says in his notes, "It is next to impossible to obtain one perfect, as they break themselves to pieces on the slightest touch, or however carefully killed."

Genus III. ANTINOË, *Kinberg*, l. c. 385.

Bases of antennæ fixed under the margin of the emarginated cephalic lobe, close to the tentacle; elytra 12–15 pairs, covering the back; body short.

Sp. 1. ANTINOË LÆVIS.

Polynoë lævis, *Aud. & Edw. Littoral de la France*, ii. 85, t. 2. f. 11–19.

Hab. Coast of France, Isle of Chausey, *MM. Audouin and Milne-Edwards* (*Mus. Brit.*).

Sp. 2. ANTINOË PHARETRATA.

Lepidonotus pharetratus, *Johnston, Cat. Non-parasitical Worms in Brit. Mus.* p. 113, t. 3. f. 17–19.

Hab. British coast, *Dr. Johnston, J. G. Jeffreys* (*Mus. Brit.*).

Sp. 3. ANTINOË IMPAR.

Polynoë impar, *Johnston, Ann. Nat. Hist.* ii. 436, t. 22. f. 3–9.

Hab. British coasts, *Dr. Johnston* (*Mus. Brit.*).

The only specimen we possess was taken on the coast of Northumberland.

Sp. 4. ANTINOË SEMISCUPTA.

Lepidonotus semisculptus, *Leach, MS. Johnston; in Catalogue of Non-parasitical Worms in Brit. Mus.*, p. 116.

Hab. South Devon coast, *J. Cranch*; Guernsey, *J. Smith* (*Mus. Brit.*).

Sp. 5. ANTINOË PELLUCIDA.

Lepidonotus pellucidus, *Dyster, MS.; Johnston, l. c.* 117.

Hab. Tenby, *Dyster*.

- Sp. 6. *ANTINOË ÆQUISETA*, *Kinberg, l. c.* 385, and *Fregatt. Eugen. Resa*, p. 19, tab. 6. figs. 27, 27 B-27 G.
Hab. Port Natal, South Africa, *J. A. Wahlberg*.
- Sp. 7. *ANTINOË WAAHLI*, *Kinberg, l. c.* and *Fregatt. Eugen. Resa*, p. 19, tab. 6. figs. 28, 28 A-28 H, tab. 10. fig. 55.
Hab. Port Jackson, *Kinberg*.
- Sp. 8. *ANTINOË PULCHELLA*, *Kinberg, l. c.*, and *Fregatt. Eugen. Resa*, p. 20, tab. 6. figs. 29, 29 A-29 H, tab. 10. fig. 56.
Hab. Mouth of River Plate, South America, *Kinberg*.
- Sp. 9. *ANTINOË MICROPS*, *Kinberg, l. c.* and *Fregatt. Eugen. Resa*, p. 20, tab. 6. figs. 30, 30 B-30 H.
Hab. Rio Janeiro, *Kinberg*.
- Sp. 10. *ANTINOË SPINIFERA*.
Polynoë(*Antinoë*) *spinifera*, *Ehlers, die borsten. Würmer*, i. p. 95, tab. 3. f. 1-4.
Hab. Quarnero, Istria, *Ehlers*.
- Sp. 11. *ANTINOË LONGISETIS*.
Polynoë longisetis, *Grube, Archiv für Naturg.* 1863, p. 37, t. 4. f. 1.
Hab. Lussin Island, Adriatic, *Grube*.
- Sp. 12. ? *ANTINOË TENUISETIS*.
Polynoë tenuisetis, *Grube, Annulat. Oerstediana*, p. 20.
Hab. Rio Janeiro, *Kröyer*.
- Sp. 13. ? *ANTINOË EXANTHEMA*.
Polynoë exanthema, *Grube, l. c.*
Hab. Valparaiso, *Kröyer*.
- Sp. 14. ? *ANTINOË CRUCIS*.
Polynoë Crucis, *Grube, l. c.* p. 21.
Hab. Island of Santa Cruz, West Indies, *Oersted*.
- Sp. 15. ? *ANTINOË LEUCOHYBA*.
Polynoë leucohyba, *Schmarda, Neue wirb. Th.* 153, t. 36. f. 308.
Hab. Port Royal, Jamaica, *Schmarda*.
 I quote this species with a doubt, because though in its general appearance it agrees with the genus *Antinoë*, yet it possesses 17 pairs of elytra.
- Sp. 16. ? *ANTINOË VIOLACEA*.
Polynoë violacea, *Schmarda, l. c.* 154, t. 36. f. 313.
Hab. Coast of Chili, *Schmarda*.
- Sp. 17. ? *ANTINOË AUSTRALIS*.
Polynoë australis, *Schmarda, l. c.* 154.
Hab. Port Jackson, New South Wales, *Schmarda*.

Sp. 18. ? ANTINOË LOBOSTOMA.

Polynoë lobostoma, *Schmarda*, l. c. p. 155, t. 36. fig. 315.

Hab. Canal of St. Malo, *Schmarda*.

Sp. 19. ? ANTINOË MACROLEPIDOTA.

Polynoë macrolepidota, *Schmarda*, l. c. p. 155, t. 36. fig. 306.

Hab. Auckland Bay, New Zealand, *Schmarda*.

Sp. 20. ? ANTINOË POLYTRICHA.

Polynoë polytricha, *Schmarda*, l. c. p. 156.

Hab. South coast of Jamaica, *Schmarda*.

Sp. 21. ? ANTINOË NEPHROLEPIDOTA.

Polynoë nephrolepidota, *Schmarda*, l. c. t. 36. f. 312.

Hab. East coast of Ceylon, near Trincomalee, *Schmarda*.

I have not seen any of the species described by Grube and Schmarda; and the characters as given by these authors do not enable me to refer them, without considerable doubt, to this generic group. The species *P. leucohyba*, as I have stated above, possesses 17 pairs of elytra, *P. polytricha* 16; and the number of these appendages is not stated by Schmarda in the *P. nephrolepidota*.

Sp. 22. ANTINOË GRANULOSA.

Polynoë granulosa, *Rathke*, *Faun. der Krym*, *Mem. Acad. Petersb.* iii. 408.

Hab. Sebastopol, *Rathke*.

Sp. 23. ? ANTINOË FASCICULOSA.

Polynoë fasciculosa, *Blanchard*, in *Gay's Histor. fisic. y politic. de Chile*, iii. p. 17, *Atlas*, *Anillados*, pl. 1. fig. 3.

Hab. Chile, *Gay*.

Sp. 24. ANTINOË MARGINATA.

Polynoë marginata, *Grube*, *Annulat. Oersted.* p. 22.

Hab. Callao, *Kröyer*.

Genus IV. HARMOTHOË, *Kinberg*, l. c. p. 386.

Bases of antennæ fixed under the tentacle, which occupies the notch in front of cephalic lobe; elytra 15 (14 to 15?) pairs, covering the back; body not long.

Sp. 1. HARMOTHOË CIRRATA.

Aphrodite cirrata, *Fabricius*, *Faun. Grænland.* 308, tab., f. 7.

Hab. British coasts; coast of France, &c. (*Mus. Brit.*).

Sp. 2. HARMOTHOË ASSIMILIS.

Lepidonota assimilis, *Oersted*, *Annulat. Danicor. Conspect.* p. 13.

Hab. Oresund, coast of Denmark, *Oersted*.

Sp. 3. *HARMOTHOË SCABRA*.

Aphrodita scabra, *Fabricius, Faun. Grænl.* 311.

Hab. North Sea (*Mus. Brit.*).

Sp. 4. *HARMOTHOË SPINOSA*, *Kinberg, l. c.* 386, and *Fregatt. Eugen. Resa*, p. 21, tab. 6. figs. 31, 31 A–31 H, tab. 10. fig. 57.

Hab. Straits of Magellan (*Mus. Brit.*).

We are indebted for a specimen of this species to the Lords of the Admiralty. It was obtained, during the voyage of H. M. Ship 'Rattlesnake,' in the Straits of Magellan.

Sp. 5. *HARMOTHOË AREOLATA*.

Polynoë areolata, *Grube, Archiv für Naturg.* 1860, p. 72, t. 3. fig. 2.

Hab. Mediterranean and Adriatic Seas, *Grube*.

Sp. 6. *HARMOTHOË PLUMOSA*.

Polynoë plumosa, *Grube, Actinien Echinod. und Würmer des Adriatischen und Mittelmeers*, p. 86.

Hab. Adriatic and Mediterranean Seas, *Grube*.

Sp. 7. ? *HARMOTHOË FASCICULOSA*.

Polynoë fasciculosa, *Grube, l. c.* 87.

Hab. Adriatic and Mediterranean Seas, *Grube, l. c.* 25.

Sp. 8. ? *HARMOTHOË SETOSISSIMA*.

Polynoë setosissima, *Savigny, Syst. des Annelid.* 25.

Hab. Havre, *Cuvier*.

Sp. 9. *HARMOTHOË NODOSA*.

Polynoë nodosa, *Sars, Förhand. Vidensk. Selskab. Christiania*, 1860. p. 58.

Hab. Coast of Sweden, *Sars*.

Sp. 10. *HARMOTHOË ASPERRIMA*.

Polynoë asperrima, *Sars, l. c.* 59.

Hab. Coast of Sweden, *Sars*.

This species, according to Sars, has 18 pairs of elytra. In other respects it agrees generically with *Harmothoë* as described by Kinberg.

Sp. 11. *HARMOTHOË RARISPINA*.

Polynoë rarispina, *Sars, l. c.* 60.

Hab. Coast of Sweden, *Sars*.

Sp. 12. *HARMOTHOË SCABRIUSCULA*.

Polynoë scabriuscula, *Sars, l. c.* 61.

Hab. Coast of Sweden, *Sars*.

Sp. 13. *HARMOTHOE UNICOLOR*, sp. nov.

Animal elongate-elliptical, narrow, about 1 inch in length, and about 3 lines in breadth, nearly uniform in breadth throughout. Head-lobe broad. Tentacle long, of a dark-brown colour for two-thirds of its length; incrassated near the extremity, which is quite white; and terminating in a long, delicate, white, setaceous point. Antennæ much shorter than the tentacle, but longer than head-lobe, slender, and terminating, like the tentacle, in a long, slender, delicate, white point. Palpi stout, setaceous, not ringed with black and white, and of nearly the same length as the tentacle. Elytra 14 pairs, of a uniform olive-colour, covering the whole of the back, with the exception of five or six of the last articulations, which are naked and spotted with black. The upper elytra are nearly round and small, the others becoming oval and larger as they descend down the back toward the lower extremity. They are sparsely fringed with a few setæ on outer edge, and covered all over with minute spots, which under the microscope appear as very short, blunt setæ, set upon a round pedicle, and having the appearance of the stopper of a wine-decanter. Feet biramous, the bristles of the two branches differing in structure. The ventral bristles are shorter and stouter than the dorsal, scimitar-shaped, slightly uncinatè at the point, and strongly serrated on the convex edge for some distance along the upper half. Dorsal bristles rather slender, toothed at the point, and strongly denticulate along both edges for some distance, and somewhat enlarged near the point where the denticulations commence. The dorsal cirri resemble the tentacle and antennæ in structure.

This species strongly resembles the *H. cirrata*, except in the number of elytra (which apparently do not exceed 14 in number), and in their uniform colour.

Hab. Esquimalt Harbour, Vancouver Island, *J. K. Lord*.

Genus V. *HERMADION*, *Kinberg*, *l. c.* 386.

Antennæ with their bases attached to the cephalic lobe under the tentacle, which occupies the notch in front; elytra 15 pairs, not meeting on the back, and leaving the middle of the dorsal region and the posterior segments uncovered; ventral setæ serrated below the apex; body elongated.

Sp. 1. *HERMADION LONGICIRRATUM*, *Kinberg*, *l. c.* and *Fregatt*.

Eugen. Resa, p. 22, tab. 6. figs. 33, 33 A-33 H.

Hab. Straits of Magellan, *Kinberg*.

Though this species is stated by Kinberg only to occur in the Straits of Magellan, we have in the collection a considerable number of specimens brought from various habitats, though all from the South Atlantic Ocean. We have them from Hermit Island, Cape Horn—from the Falkland Islands—the sea off Crozet's Island, Kerguelen's Land—and, though with some doubt, from the shores of New Zealand. They were collected chiefly by the officers attached to the Antarctic Expedition (*Mus. Brit.*).

Sp. 2. *HERMADION MAGELHAENSE*, *Kinberg, l. c.* and *Fregatt. Eugen. Resa*, p. 22, tab. 6. figs. 32, 32 A–32 H.

Hab. Straits of Magellan, *Kinberg*.

Sp. 3. ? *HERMADION EXTENUATUM*.

Polynoë extenuata, *Grube, Actin. Echin. und Würm. Adriat. und Mittelmeers*, p. 86.

Hab. Adriatic and Mediterranean Seas, *Grube*.

Sp. 4. ? *HERMADION PELLUCIDUM*.

Polynoë pellucida, *Ehlers, die Borstenwürm.* i. 105, t. 3. f. 5, 7–14, t. 4. f. 1–4.

Hab. Quarnero, Istria, *Ehlers*.

These two latter species are doubtfully referred to this generic group, *H. pellucidum* having only 10 pairs of elytra.

Sp. 5. ? *HERMADION TROCHISCOPHURUM*.

Polynoë trochiscophora, *Schmarda, Neue wirb. Th.* p. 151, tab. 36. f. 310, 310a, b.

Hab. Table Bay, Cape of Good Hope.

This species, apparently belonging to this genus, has only 12 elytra, instead of 15. Notwithstanding this discrepancy, the place for it seems to be here.

Sp. 6. *HERMADION FEROX*, sp. nov.

This very striking species is about 2 inches long, exclusive of the proboscis. The colour of the whole dorsal surface, except the bristles of the feet, is nearly black; and the ventral surface is of a dark pearly hue. It is slightly attenuated at the inferior extremity. It has a singular appearance, from the very strong, straight spines on the dorsal branch of the foot, which extend nearly an inch from the body, and give it a ferocious aspect.

The head is of moderate size; eyes large and round; tentacle very short, thick at the base, setaceous at the point. Antennæ a little longer, fixed by their bases under the tentacle, setaceous; palpi long, thick at the base, setaceous at the point. Proboscis

large, black; jaws large and stout. Feet strong, biramous, the two branches of nearly equal size and wide apart. Bristles of dorsal branch very long, strong and sharp-pointed, smooth, and of a bright horn-colour. Bristles of ventral branch much shorter, and finely serrated from a little below the sharp smooth point down for about $\frac{1}{3}$ rd of their length. Both branches are produced into a long sharp point. Dorsal cirrus long, very slender and setaceous, only a little shorter than the long bristles of dorsal branch. Elytra thin, membranous, nearly smooth, but armed with a few scattered, rather strong prickles. Anal cirri long, slender, and setaceous like the dorsal cirri. Ventral cirri set upon strong peduncles, reaching to about the end of ventral branch of foot.

Hab. Dredged, during the Antarctic Expedition, from a depth of 300 fathoms, in lat. S. $74\frac{1}{2}^{\circ}$, long. E. $175\frac{1}{2}^{\circ}$ (*Mus. Brit.*).

Sp. 6. *HERMADION FULIGINEUM*, sp. nov.

The animal is about $1\frac{1}{2}$ inch in length, and, including the setæ of feet, about $\frac{1}{2}$ an inch broad. It is nearly black, the dorsal surface especially so, while down the centre of the ventral surface there runs a lighter-coloured streak or line. The head is of moderate size; the antennæ are affixed by their bases to the cephalic lobe under the tentacle, and are short. The tentacle is long—about three times the length of the antennæ. The palpi are very stout at their bases, and very long, much longer than the tentacle. All these organs are smooth and setaceous. The feet are stout, biramous; and each branch is prolonged into a long, sharp, setaceous point, that of the ventral branch being the longest. The two spines are brown-coloured, and extend to the point of each prolongation. The bristles of the dorsal branch are slightly curved and densely serrated along the upper half of their length. Those of the ventral branch are longer, more numerous, more slender, straight, and toothed from the apex, on each side, for about a third of their length. The dorsal cirri are long, setaceous, and sparsely and irregularly armed with cilia. The ventral cirri are sharp and setaceous. The elytra are 15(?) pairs, oval in shape, and covered all over with minute granulations. The margin and the surface near the external margin are dotted with large, round, prominent tubercles; and one extremity is densely fringed with cilia.

All the specimens we possess are unfortunately in rather bad condition, so that it is difficult to determine the exact length of

the animal and the number of the elytra. Most of the dorsal cirri, too, have fallen off.

Hab. Along with the preceding species, from a depth of 300 fathoms, in lat. $74\frac{1}{2}^{\circ}$ S., long. $175\frac{1}{2}^{\circ}$ E. (*Mus. Brit.*).

Genus VI. THORMORA, gen. nov.

Bases of antennæ produced from the anterior margin of the cephalic lobe; elytra 12 pairs, not covering the middle of the back, and leaving the posterior segments of the body naked; setæ of dorsal branch of feet of two kinds; body elongated.

Sp. THORMORA JUKESII, sp. nov.

Animal about $1\frac{1}{2}$ inch long, rather more slender at the anterior extremity, elongated, and of a very dark colour. Antennæ and tentaculum nearly of the same length, incrassated a little below the apex, where they suddenly become produced to a fine slender point. Palpi longer than antennæ or tentacle, conical at the base, setaceous at the point. Buccal cirri of about the same length as the palpi, and, like the antennæ and tentacle, incrassated below the apex, and terminating suddenly in a sharp slender point. Elytra 12 pairs, but apparently small, and leaving the middle of the back and lower portion of the body uncovered. They are of a rounded form, tuberculated on the surface, and ciliated on the external margin. The feet are stout, biramous. Bristles of ventral branch stout, of a yellow colour, somewhat curved near the apex, and a little below the point strongly serrated and striated across. The fascicle of bristles springing from the dorsal branch is composed of two kinds,—one numerous, slender when compared with those of ventral branch, straight, acute at the point, and very finely serrated on both sides; the other, slender hairs, longer than the others, very numerous and quite smooth, appearing like a brush of fine hairs intermixed with the bristles. The dorsal cirri are, like the antennæ, incrassated below the apex, and ringed with black, and terminating suddenly in a fine slender point. Ventral cirri of feet setaceous, and reaching nearly to the apex of the ventral branch of the foot. Anal cirri stout, and of the same structure as the dorsal.

In the way in which the antennæ are attached to the cephalic lobe, and in the number of elytra, this species might appear to belong to the genus *Lepidonotus* as restricted by Kinberg; but the disposition of the elytra, their leaving the middle of the back and the posterior segments of the body uncovered, distinguish it

from that genus, and would apparently refer it to the genus *Hermadion*. It differs from that genus, however, in the number of the elytra, whilst, on the other hand, the existence of two distinct kinds of bristles in the fascicle of the dorsal branch of the feet distinguishes it from all of the genera established by Kinberg. I have therefore been obliged to propose for its reception a new genus, which I have characterized as above.

For the specimen of this species in the collection we are indebted to Mr. Jukes, who collected it during the voyage of H.M. ship the 'Fly.' Unfortunately the habitat has not been preserved; but probably it is a native of the seas of Australia or New Zealand (*Mus. Brit.*).

Genus VII. NOREPEA, gen. nov.

Head three-lobed. Tentacle attached to the margin of the centre lobe; palpi attached to the side lobes; no antennæ. Elytra 14 pairs, covering the back entirely. Body short.

Sp. NOREPEA PERONEA.

Polynoë Peronea, *Schmarda*, l. c. 157, t. 36. f. 315*, 315*a.

Hab. Coast of Ceylon, *Schmarda*.

This species approaches in general form and appearance to the *Polynoë* (*Iphione*) *muricata* of Savigny. It differs, however, from that species in the number of elytra, in having a tentacle, which is wanting in the genus *Iphione*, and in the absence of antennæ, which, again, are present in *Iphione*.

I only know the animal in question from Schmarda's figure and description.

Genus VIII. HERMENIA, Grube, *Annulata Oerstediana*, p. 18.

Tentacle long. Antennæ only half the length of the tentacle, but much exceeding the 1st elytron. No palpi. Elytra 12 pairs, exceedingly small, except 1st pair. Branches of feet connate. Body short.

In his description of this genus, Grube makes no mention of the situation of tentacle and antennæ, or appearance of cephalic lobe; and the species upon which the genus is founded I have never seen.

Sp. HERMENIA VERRUCULOSA, Grube, l. c.

Hab. St. Jan (Honduras?), *Oersted*.

Genus IX. HEMILEPIDIA, *Schmarda*, l. c. 149.

Elytra 15 pairs, placed only on anterior portion of body, the posterior (larger portion) being left uncovered. Dorsal cirri in all the segments. Eyes 4; jaws 4, large.

Schmarda, who first characterized this genus, says that it is closely allied to the genus *Hermadion* of Kinberg, differing chiefly from it in the possession of large maxillæ.

Sp. 1. HEMILEPIDIA TUBERCULATA, *Schmarda*, l. c.

Hab. Table Bay, Cape of Good Hope, *Schmarda*.

Sp. 2. HEMILEPIDIA ERYTHROTÆNIA, *Schmarda*, l. c. 150.

Hab. Sea, near Cape of Good Hope, *Schmarda*.

Genus X. POLYNOË (as restricted by Oersted).

Polynoë et Lepidonotus (pars) auctorum.

Antennæ with their bases attached to the anterior portion of cephalic lobe, under the tentacle. Elytra 15 to 40 pairs, placed only on the anterior portion of the body, leaving the greater part of the posterior portion uncovered. Dorsal cirri alternating with the elytra. Branches of feet connate; bristles simple; body long and slender.

Sp. 1. POLYNOË SCOLOPENDRINA, *Savigny*, *Syst. Annél.* p. 25.

This fine species, at least 4 inches in length, is a native of the coasts of France as well as England.

Hab. Falmouth (*Mus. Brit.*).

Sp. 2. POLYNOË LONGISSIMA.

Eumolpe longissima, *Blainville*, *Dict. Sc. Nat.* lvii. 459, Atlas, pl. 10. f. 3.

M. Audouin and Milne-Edwards notice this species in their 'Hist. Nat. Littoral de la France,' quoting Blainville's specific name and figure, but regret that it had not been more fully described. I have not seen the species.

Hab. Coast of Genoa, *Blainville*.

Sp. 3. POLYNOË BLAINVILLII, *M.-Edwards*, *Littoral de la France*, p. 94; *Grube*, *Famil. der Annelid.* pp. 37 and 120.

Eumolpe scolopendrina, *Blainville*, *Dict. Sc. Nat.* lvii. 459, Atlas, pl. 10. f. 2.

Hab. Unknown.

Sp. 4. POLYNOË ELEGANS, *Grube*, *Actin. Echinod. Würm. des Adriat. und Mittelmeers*, p. 85.

Hab. Adriatic and Mediterranean Seas *Grube*.

Sp. 5. POLYNOË VARIEGATA, *Grube, Ann. Oersted.* 23.

Hab. Madeira, *Kröyer*.

Sp. 6. POLYNOË NIGROVITTATA, *Grube, l. c.* 24.

Hab. Rio Janeiro, *Kröyer*.

Sp. 7. POLYNOË ANTARCTICA, *Kinberg, Bearbeitung der Würmer K. Svenska Fregatten Eugénies Resa* (fide *Carus*).

Hab. Straits of Magellan, *Kinberg*.

Sp. 8. POLYNOË AUCKLANDICA, *Schmarda, l. c.* 158.

Hab. Auckland, New Zealand, *Schmarda*.

Sp. 9. ? POLYNOË LONGA.

Aphrodite longa, Fabricius, Faun. Grænland. p. 313.

Hab. Coast of Greenland, *Fabricius*.

This species is said by Fabricius to possess 56 pairs (!) of elytra.

Sp. 10. ? POLYNOË MINUTA.

Aphrodite minuta, Fabricius, l. c. 314.

Hab. Coast of Greenland ?, *Fabricius*.

[To be continued.]

On the Surface-fauna of mid-Ocean.

By Captain SAMUEL R. J. OWEN, F.L.S.

[Read March 2, 1865.]

No. I.

POLYCYSTINA AND ALLIED RHIZOPODS.

SOME years since, when surface-dredging for Pteropods, &c., in the Bay of Bengal and other parts, living Polycystina, together with a few species of Foraminifera, were frequently found attached to the nets. This induced me to systematically dredge the surface of mid-ocean for these Rhizopods on the first opportunity that afterwards presented itself. The regions chosen for these researches were the Indian and Atlantic Oceans, where there were few or no islands near, the washings from whose shores might interfere with the results.

The surface-dredgings were commenced near the Sandheads in the Bay of Bengal, and in a longitude of about 90° east, until we arrived at 10° south of the line, thence making nearly a direct course for the Cape Land, passing Madagascar at a distance of 250 miles. They were resumed in the South Atlantic Ocean, near the Cape of Good Hope, and continued in nearly a straight